

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LENOVO (UNITED STATES) INC.
Petitioner

v.

BLACKBIRD TECH LLC D/B/A BLACKBIRD TECHNOLOGIES
Patent Owner

Patent No. 7,129,931

Inter Partes Review No. _____

**PETITION FOR *INTER PARTES* REVIEW OF
U.S. PATENT NO. 7,129,931**

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EXHIBIT LIST

EXHIBIT	DESCRIPTION
1001	U.S. Patent No. 7,129,931 (“’931 patent”)
1002	Declaration of Dr. T. Kim Parnell (“Decl.”)
1003	<i>Curriculum Vitae</i> of Dr. T. Kim Parnell
1004	Excerpts from File History of U.S. Patent 7,129,931
1005	U.S. Patent No. 5,016,849 (“Wu”)
1006	U.S. Patent No. 5,708,840 (“Kikinis”)
1007	U.S. Patent No. 5,335,142 (“Anderson”)
1008	Certified Translation of Japanese Patent Appl. Publ. No. JP11161367 (“Ioka”)
1009	U.S. Patent No. 5,632,373 (“Kumar”)

I. INTRODUCTION

Lenovo (United States) Inc. (“Lenovo”) requests institution of *inter partes* review (“IPR”) of claims 1, 2, 3, 6, 8, 9, and 10 (the “challenged claims”) of U.S. Patent No. 7,129,931 (“the ’931 patent”), titled “Multipurpose Computer Display System” (Ex. 1001), in accordance with 35 U.S.C. §§ 311-319 and 37 C.F.R. § 42.100 *et seq.* The challenged claims are unpatentable under 35 U.S.C. § 103 over the references identified and applied in this Petition.

II. MANDATORY NOTICES (37 C.F.R. §42.8(a)(1))

A. Real Parties-In-Interest (37 C.F.R. § 42.8(b)(1))

Petitioner Lenovo (United States) Inc. is a real party-in-interest. Lenovo Holding Company Inc., and Lenovo Group Ltd. are also real parties-in-interest.

B. Related Matters (37 C.F.R. § 42.8(b)(2))

The ’931 patent has been asserted in one lawsuit that may affect or be affected by a decision in this proceeding: *Blackbird Tech LLC d/b/a Blackbird Technologies v. Lenovo (United States)*, No. 1:16-cv-00140 (D. Del.).

C. Lead and Back-up Counsel (37 C.F.R. §§ 42.8(b)(3) and 42.10(a))

Petitioner designates the following: Lead Counsel is Eric J. Klein (Reg. No. 51,888) of Vinson and Elkins LLP; back-up Counsel are Todd E. Landis (Reg. No. 44,200) and Mario A. Apreotesi (Reg. No. 65,293) of Vinson and Elkins LLP.

D. Service Information

Petitioner consents to service by email at:

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E. Fees

The required filing fees are to be withdrawn from Deposit Account No. 22-0365. The Office is authorized to charge fee deficiencies or credit overpayments to Deposit Account No. 22-0365.

F. Standing (37 C.F.R. § 42.104(a))

Petitioner certifies that the '931 patent is available for IPR, and that Petitioner is not barred or estopped from requesting IPR of any claim of the '931 patent. A Power of Attorney accompanies this petition pursuant to § 42.10(b). An Exhibit List under § 42.63(e) is filed herewith.

III. CITATION OF PRIOR ART

In support of the grounds of unpatentability presented in this petition, Petitioner relies on the following prior art references:

U.S. Patent No. 5,016,849 (“Wu”), titled “Swivel Mechanism for a Monitor of a Laptop Computer,” was filed on November 17, 1989 and issued on May 21, 1991 to Sunny Wu. Ex. 1005. Wu is prior art under at least 35 U.S.C. § 102(b).

U.S. Patent No. 5,708,840 (“Kikinis”), titled “Micro Personal Digital Assistant,” issued on January 13, 1994 to Dan Kikinis et al. Ex. 1006. Kikinis is prior art under at least 35 U.S.C. § 102(b). The application that led to Kikinis was filed on March 4, 1996.

U.S. Patent No. 5,335,142 (“Anderson”), titled “Portable Computer Display Tilt/Swivel Mechanism,” issued on August 2, 1994 to William J. Anderson. Ex. 1007. Anderson is prior art under at least 35 U.S.C. § 102(b). The application that led to Anderson was filed on December 21, 1992.

Japanese Patent Application Publication No. 11-161367 (“Ioka”), titled “Portable Information Processor,” published on June 18, 1999 to Ioka Tsunejiro. Ex. 1008. Ioka is prior art under at least 35 U.S.C. § 102(b). The application that led to Ioka was filed on November 27, 1997.

U.S. Patent No. 5,632,373 (“Kumar”), titled “Protective Case for Portable Computer,” issued on May 27, 1997 to Rajendra Kumar and Steven E. Brooks. Ex. 1009. Kumar is prior art under at least 35 U.S.C. § 102(b). The application that led to Kumar was filed on April 3, 1995.

Lenovo also relies on the knowledge, common sense, and ordinary creativity of a POSITA at the time of the alleged invention of the ’931 patent, which would have motivated a POSITA to combine or modify the cited references to arrive at the claimed inventions. *See, e.g., KSR Int’l Co. v. Teleflex*, 550 U.S. 398, 420-21 (2007).

IV. STATEMENT OF THE PRECISE RELIEF REQUESTED

Under 35 U.S.C. § 311 and 37 C.F.R. § 42.104(b), Petitioner respectfully requests *inter partes* review of claims 1, 2, 3, 6, 8, 9, and 10 of the ’931 patent (Ex. 1001), which issued on October 31, 2006, from an application filed on September 14, 2001. The challenged claims are unpatentable under 35 U.S.C. § 103 over the following prior art:

Ground 1: Claims 1-3 and 8 are unpatentable under 35 U.S.C. §103 over Wu in view of Kikinis.¹

Ground 2: Claims 9 and 10 are unpatentable under 35 U.S.C. §103 over Wu in view of Kikinis and Anderson.²

Ground 3: Claim 6 is unpatentable under 35 U.S.C. §103 over Wu in view of Kikinis and Ioka.

Ground 4: Claims 1 and 8 are unpatentable under 35 U.S.C. §103 over Wu in view of Kumar.³

¹ Although the examiner cited Kikinis during prosecution of the '931 patent, the Board should not deny institution of this Ground based on 35 U.S.C. 325(d) because (1) the examiner did not substantively apply Wu and (2) the combination of Wu with Kikinis is a new combination that is neither redundant nor cumulative of the '931 patent's prosecution. *See Baker Hughes Inc. v. Liquid Power Specialty Products Inc.*, IPR2016-01901 (PTAB April 7, 2017) Paper 10 at 11 (declining to exercise discretion under § 325(d) where the petitioner is relying on prior art and combinations of prior art that were not asserted to reject the claims during prosecution); *Panties Plus, Inc. v. Bragel Int'l, Inc.*, IPR2017-00044 (PTAB April 12, 2017), Paper 6 at 9-10 (declining to exercise § 325(d) discretion where the prior art was previously before the Office, but not in the precise combinations argued in the petition).

² Although the examiner cited Anderson during prosecution of the '931 patent, the Board should not deny institution of this Ground based on § 325(d) because (1) the applicant did not dispute that Anderson teaches the limitations of claims 9 and 10 and (2) Anderson is being relied upon in a new combination (with Wu) that is neither redundant nor cumulative of the '931 patent's prosecution. *See Baker Hughes Inc.*, IPR2016-01901 (PTAB April 7, 2017) Paper 10 at 11; *Panties Plus, Inc.*, IPR2017-00044 (PTAB April 12, 2017), Paper 6 at 9-10.

³ To the extent the Board concludes that Kikinis does not disclose the “port” limitation of claim 1 to a POSITA, claim 1 is obvious under § 103 over Wu in view of Kumar, which discloses an input/output port on the front wall of a laptop base.

Ground 5: Claims 3, 9, and 10 are unpatentable under 35 U.S.C. § 103 over Wu in view of Kumar and Anderson.

Ground 6: Claims 2 and 6 are unpatentable under 35 U.S.C. § 103 over Wu in view of Kumar, and Ioka.

V. OVERVIEW OF THE '931 PATENT

A. Summary Of The Claimed Subject Matter

The '931 patent (Ex. 1001) is directed to a portable computer display system. According to the specification, the alleged invention “allows a computer user to easily and effectively maximize the value and utility of the laptop’s flat panel display.” '931 patent at 2:60-63. The '931 patent provides a rotatable flat panel display that works in combination with the supposedly advantageous positioning of a port on the front face of the computer. '931 patent at 3:63-67. The alleged invention of the '931 patent meets this objective by having the structure identified in Figs. 1 and 5—each showing the portable computer, having a port (112), yet depicting the flat panel display in a traditional arrangement facing the user ('931 patent at Fig. 1, left) and an alternative position facing away from the user ('931 patent at Fig. 5, right).

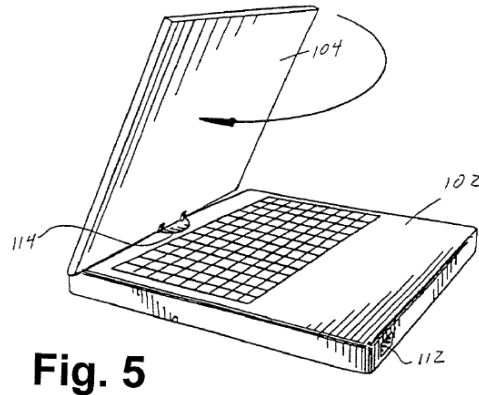
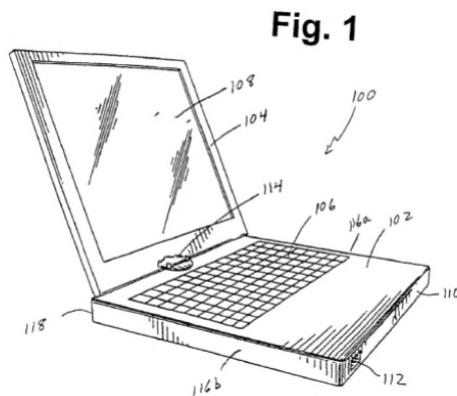


Fig. 3, partially depicted below, is a close up of the mounting assembly (114) that facilitates the dual axis rotational operability of the flat panel display relative to the keyboard base. '931 patent at Fig. 3, 3:3-13. The device generally includes a rotating turret (130) that has two vertically extending posts (120). '931 patent at 7:13-15. The specification states that "[l]aptop computers generally employ flat-panel monitors for reasons of necessity, given space/weight constraints and the desire to pivotally mount the monitor relative to the base/keyboard for system protection and portability." '931 patent at 1:60-63. The display (104) has two recesses (124) that couple it to the posts (120), allowing for the opening and closing, or pivoting, of the display onto the keyboard base. '931 patent at 7:15-17. The rotating turret is mounted onto the keyboard unit to facilitate rotational movement of the display relative to the keyboard base along a second or vertical axis. '931 patent at 7:28-39. The communication conduit (140), shown as a ribbon cable, is disclosed as extending from the keyboard unit (not shown) and into the display (104). '931 patent at 7:30-36.

B. Prosecution History

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rejected claims 1-3 and 8-10 (among others) as unpatentable under 35 U.S.C. 103 over Anderson in view of Kim (U.S. Patent No. 6,151,207) and Kikinis. Ex. 1004 at 10. Although the examiner rejected claims 9 and 10 in view of Anderson, the applicant did not traverse this rejection. *Compare* Ex. 1004 at 13, *with* Ex. 1004 at 6. Similarly, the applicant did not rebut the examiner's rejection that Kikinis discloses the "port" limitation. *Compare* Ex. 1004 at 12, *with* Ex. 1004 at 6. In rejecting claims 1 and 8, the examiner cited Kikinis as teaching the "port" proximate the front wall limitation and the "*ancillary computer system*" limitation, both of which the applicant did not rebut in his response. *Compare* Ex. 1004 at 12-13, *with* Ex. 1004 at 6. The examiner also made Wu of record, but did not rely upon it or substantially discuss it. Ex. 1004 at 16-17.

C. Level of Ordinary Skill in the Art

A person of ordinary skill in the art ("POSITA") of the '931 patent would have at least 18 months of hands-on computer physical design work or mentorship from a computer physical designer, and an undergraduate degree in mechanical engineering, manufacturing design, or an equivalent engineering degree. Decl. ¶ 19. The relevant technology in the '931 patent is not complex. Decl. ¶ 13; *see, e.g., Mintz v. Dietz & Watson, Inc.*, 679 F.3d 1372, 1376 (Fed. Cir. 2012) (listing factors that may be considered in determining level of skill, including sophistication of the technology).

D. Proposed Claim Construction

For an unexpired patent, each of the challenged claims “shall be given its broadest reasonable construction in light of the specification.” 37 C.F.R. § 42.100(b); *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1297-98 (Fed. Cir. 2015). For the purposes of this IPR, Petitioner contends that claim terms or phrases are presumed to take on their broadest reasonable interpretation in light of the specification of the ’931 patent.

Petitioner does not believe any terms require construction.

VI. THE CHALLENGED CLAIMS ARE UNPATENTABLE

A. Ground 1: Claims 1-3 and 8 are obvious under 35 U.S.C. §103 over Wu in view of Kikinis.

1. Overview of Wu

Both Wu and the ’931 patent disclose systems that provide mechanisms for positioning display screens for laptop computers. Wu teaches a system with a keyboard base and an attached moveable display screen (monitor). Wu at Fig. 2, Abstract.

Wu describes a laptop computer that includes a base, keyboard, and monitor. The system in Wu allows the screen to rotate relative to a keyboard around a horizontal axle and around a vertical axle. Wu at 1:59-63, Fig 2. The vertical axle includes a fixed seat and a positioning block (as shown in Figs. 2 and 3). Wu at 1:63-2:7.

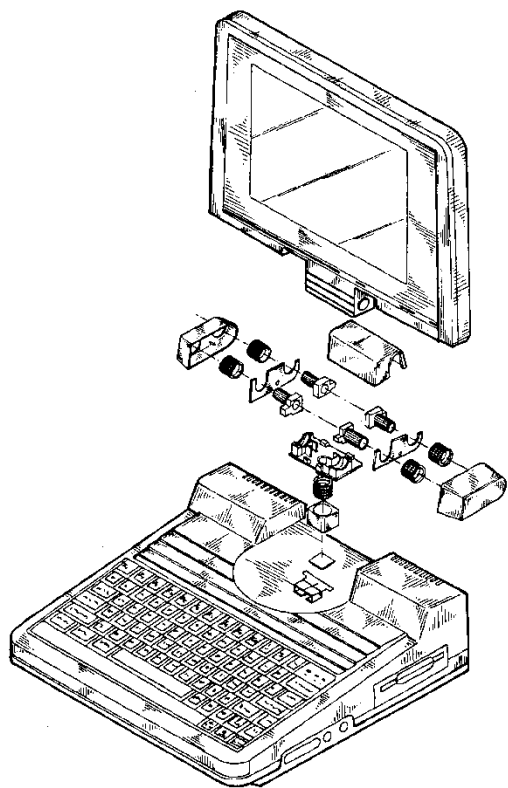


Fig. 2

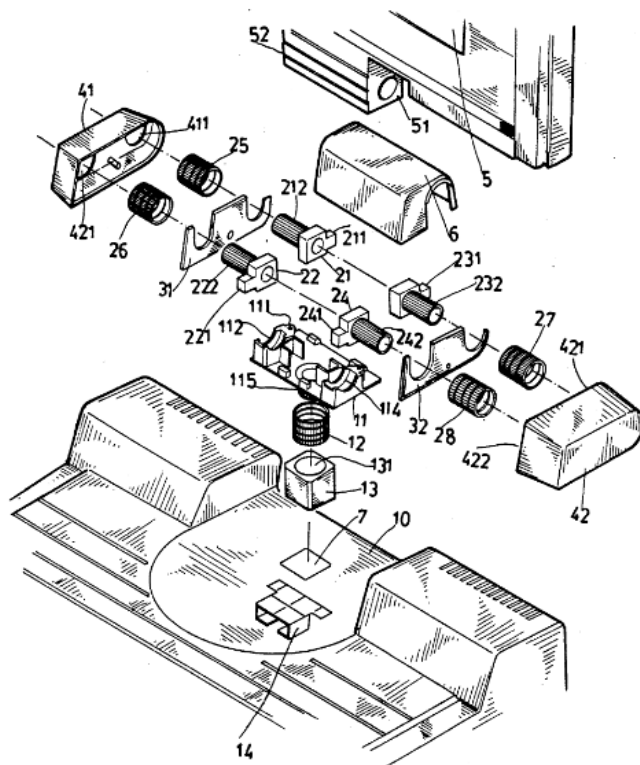


Fig. 3

The vertical axle facilitates rotation between a fixed seat and the base as shown in Fig. 5. Wu at 2:2-7.

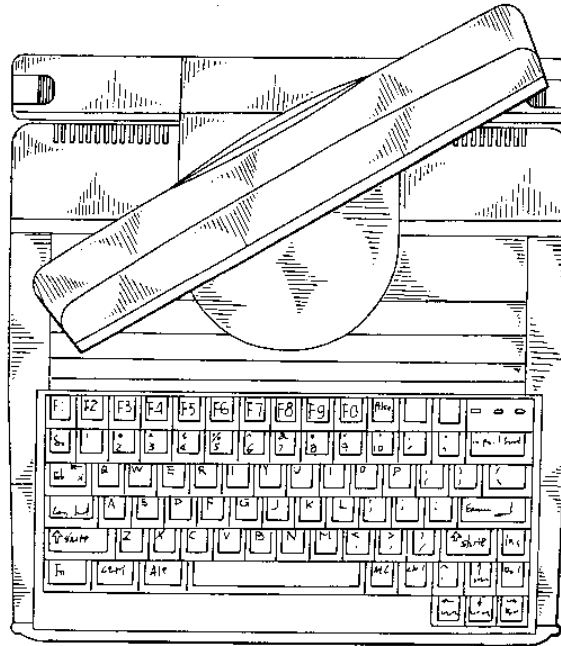


Fig. 5

The horizontal axle facilitates rotation between the fixed seat and the display screen. Wu at 2:10-43. In this manner, the monitor is able to rotate about the horizontal axle to close over the keyboard or base. Wu at Fig. 1.

2. Overview of Kikinis

Kikinis discloses a personal digital assistant module (or micro PDA) that can form a host/satellite combination with a host computer. Kikinis at Abstract. The host can be a general-purpose computer with a connection between the CPU of the host and the CPU of the personal digital assistant where the host “may be a desktop unit, a notebook computer, or a smaller portable.” Kikinis at 3:33-43. Kikinis discloses combining the micro PDA with a computer having a keyboard, tiltable

screen, and access ports. Kikinis at 4:4-7, 10:13-19, Figs. 5, 41. Figure 5 illustrates a computer 172 connecting with a micro PDA 10.

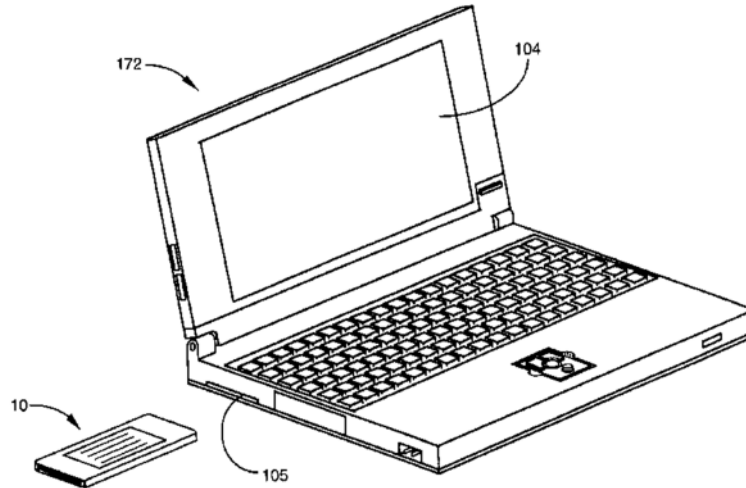


Fig. 5

Kikinis discloses another example in Fig. 41 of a host computer using a Personal Computer Memory Card International Associate (PCMCIA) connection to connect to external devices such as a micro PDA. Kikinis at 30:36-50. The laptop disclosed in Fig. 41 includes four PCMCIA ports, with at least one of them close to the front wall of the keyboard base. Kikinis at 30:41-43.

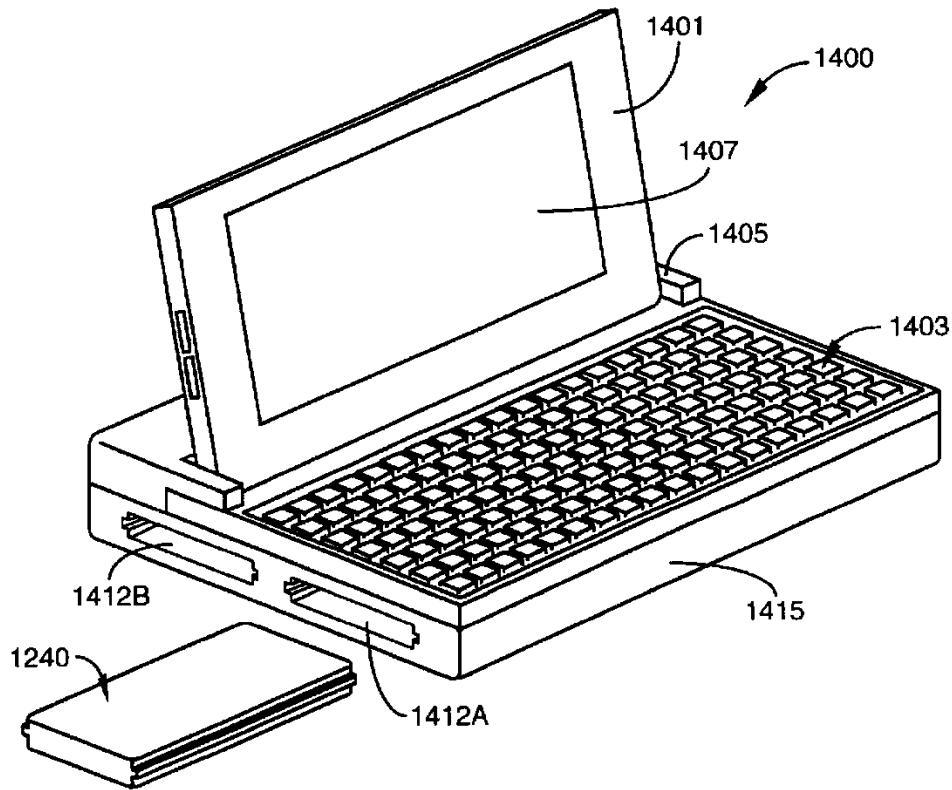


Fig. 41

Kikinis discloses function modules that attach to the PCMCIA connection and are able to transfer information to the host device from the inserted device. Kikinis at 28:56-29:4. Kikinis also discloses a variety of different types of function modules, including “specialty video modules.” Kikinis at 29:4-9.

3. **It would have been obvious to combine the rotational display of Wu with the ports and central processing unit of Kikinis.**

Wu teaches a swivel mechanism for a monitor of a laptop computer. Wu at Abstract. Wu recognizes that the working efficiency and practicality of a laptop computer could be improved by providing a swivel mechanism that allowed for

rotation about a horizontal axle and for rotation about a vertical axle. Wu at 1:23-36. Wu discloses a swivel mechanism that provides for rotation about two perpendicular axles using a fixed seat that could rotate about a vertical axle. Wu at 1:63-2:9. Wu also discloses the swivel mechanism to allow rotation about a horizontal axle that is connected to the fixed seat. Wu at 2:10-43.

A POSITA would have known that the laptop computer disclosed by Wu would need to include other hardware and components commonly found in laptop computers. Decl. ¶ 52. The POSITA would also understand that Wu only discloses a swivel mechanism and does not address other functionality of a laptop computer, including the location or functionality of ports on the laptop computer. Decl. ¶ 52. Thus, a POSITA would have looked for existing solutions to provide a complete laptop that addressed the same efficiency and practicality design goals addressed by Wu. Decl. ¶ 52. The POSITA would consider other laptop and computer systems, including those that disclose components and hardware to improve the working efficiency and practicality of computer systems. Decl. ¶ 52.

A POSITA would consider Kikinis's laptop computer and micro PDA system. Decl. ¶ 53. Kikinis discloses a small and inexpensive PDA (or micro PDA) that utilizes a direct parallel bus interface with a connector allowing the micro PDA to be plugged into a host computer. Kikinis at 2:12-14, 2:24-27. It further discloses a direct bus connection between the local CPU of the micro PDA

and the CPU of the host. Kikinis at 3:34-40. Kikinis also discloses placement of PCMCIA slots at various locations of a host laptop computer, including proximate the front wall of the laptop base. *See, e.g.*, Kikinis at Fig. 41. Kikinis discloses that the host computer includes a flat screen, CPU, and circuitry for communications between the PCMCIA slots and the CPU. Kikinis at 3:34-43, 7:38-46, 20:9-13. It would therefore have been obvious to incorporate Kikinis's laptop circuitry and components into Wu's laptop with a swivel mechanism to improve the work efficiency and practicality of the laptop. Decl. ¶ 53. A POSITA would have recognized that implementing the PCMCIA slots or similar ports proximate to the front wall of the keyboard base would have been an obvious location selection because it would allow the user to connect ancillary devices while displaying content or images therefrom to others. Decl. ¶ 53.

“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a [POSITA] can implement a predictable variation, § 103 likely bars its patentability.” *KSR*, 550 U.S. at 417. The combination of Wu and Kikinis results from common design incentives with a predictable variation of a laptop computer from the same portable computer field, making this an obvious combination of existing prior art elements. *See* Decl. ¶¶ 50-54.

4. Independent Claim 1

1[pre]. A computer system comprising:

[1a] a) a keyboard unit including a computer keyboard and a keyboard base that includes a front wall and a back wall;

[1b] b) a display screen for displaying computer-generated images, said display screen defining first and second side walls, a bottom edge that extends from the first side wall to the second side wall and two spaced slots formed in said bottom edge;

[1c] c) a mounting assembly proximate said back wall of said keyboard base, said mounting assembly including two spaced mounting brackets extending upwardly from a rotatable element and configured and dimensioned to be received within said two spaced slots, said mounting assembly joining said display screen to said keyboard unit and permitting both rotational motion of said display screen relative to a first axis and pivotal motion of said display screen relative to a second axis that is perpendicular to said first axis; and

[1d] d) a port positioned proximate said front wall of said keyboard base, said port adapted to receive a signal from an ancillary computer system;

[1e] wherein a signal from said ancillary computer system delivered to said port is effective to generate a computer-generated image on said display screen; and

[1f] wherein said bottom edge of said display screen defines an intermediate region between said pair of slots and wherein a communication conduit extends from said keyboard base directly into said intermediate region of said display screen.

Wu discloses a laptop computer system with a keyboard unit that includes a computer keyboard and keyboard base that includes a front wall and a back wall.

Wu at 1:21-22, Figs. 1, 2, 4, 5. The keyboard unit of Wu, shown in Fig. 2, includes

a keyboard base with a front wall and back wall. Wu at Fig. 2. Accordingly, Wu discloses “*a computer system*” as recited in the preamble and “*a keyboard unit including a computer keyboard and a keyboard base that includes a front wall and a back wall*” as recited in limitation 1[a]. See Decl. ¶ 55.

Wu also discloses a monitor (*display screen*) for displaying images generated by the laptop. Wu at 1:21-22, 1:28-30. The monitor of Wu is shown in Fig. 2 and includes first and second sidewalls with a bottom edge that extends from the first side wall to the second side wall. Wu at Fig. 2. The monitor of Wu also includes two spaced slots in its bottom edge to receive the fixed blocks 221 and 241 of the swivel mechanism. Wu at 2:26-29, Figs. 2, 3. Accordingly, Wu teaches “*a display screen for displaying computer-generated images, said display screen defining first and second side walls, a bottom edge that extends from the first side wall to the second side wall and two spaced slots formed in said bottom edge*” as recited in limitation 1[b]. See Decl. ¶ 56.

Wu discloses a swivel mechanism (*mounting assembly*) that allows the laptop monitor to rotate about a horizontal axis (*pivotal motion ... relative to a second axis*) and rotate about a vertical axis (*rotational motion ... relative to a first axis*), where the vertical and horizontal axes are perpendicular to one another. Wu at 1:15-18, 1:23-27, 1:59-63. The swivel mechanism of Wu connects the monitor to the keyboard base and is shown in Figs. 2 and 3 being located proximate the

back wall of the laptop's keyboard base. Wu at Figs. 2-3. The swivel mechanism includes a fixed seat (*rotatable element*) that rotates with respect to the fixed frame and keyboard base. Wu at 1:63-64, 2:2-7, Fig. 3. The longitudinal axles 22 and 24 (*spaced mounting brackets*) with fixed blocks extend upward from the fixed seat and are arranged to fit within the two spaced slots beside the inner sides of the monitor. Wu at 2:10-16, 2:26-29, Fig. 3. The ends of the axles are kept in position by two positioning plates and two side covers. Wu at 2:29-41. As a result, the monitor is able to rotate with respect to the horizontal axle. Wu at 2:41-43. Accordingly, Wu teaches “*a mounting assembly proximate said back wall of said keyboard base, said mounting assembly including two spaced mounting brackets extending upwardly from a rotatable element and configured and dimensioned to be received within said two spaced slots, said mounting assembly joining said display screen to said keyboard unit and permitting both rotational motion of said display screen relative to a first axis and pivotal motion of said display screen relative to a second axis that is perpendicular to said first axis*” as recited in limitation 1[c]. See Decl. ¶ 57.

While Fig. 2 of Wu shows ports and jacks on the side wall of the keyboard base, Wu does not expressly identify the nature of these ports and jacks. Limitations 1[d] and 1[e], however, would have been obvious in view of Kikinis. Decl. ¶ 58. A POSITA looking to facilitate communication with external

components would have used Kikinis's disclosure of terminals for connecting a micro PDA to a laptop and combined it with Wu. Decl. ¶ 58. Kikinis teaches a laptop computer with a pivotable display case and a fixed keyboard. Kikinis at 30:36-37. In an embodiment, Kikinis discloses a keyboard base that includes four PCMCIA-type module bays (*ports*), at least one of which is located proximate the front wall of the keyboard base. Kikinis at 30:41-45. Kikinis further discloses a micro PDA (*ancillary computer system*) that is modeled on the PCMCIA standard Type II form factor with a connector at one end. Kikinis at 5:66-6:11; Fig. 1A. Kikinis teaches that the micro PDA can be docked into a host device, *e.g.*, the laptop computer shown in Fig. 41, and configured to produce its display on a display area of the host device. Kikinis at 15:6-7. In this way, the laptop computer 1400 of Kikinis can receive a signal from the ancillary micro PDA and generate a computer-generated image on the display of laptop computer 1400. Decl. ¶ 58 ("In this mode, the laptop computer display essentially becomes an external screen or monitor for the ancillary micro PDA."). A POSITA would have understood that PCMCIA modules used in Kikinis's laptop could be placed on other laptop computers, such as disclosed in Wu, and positioned proximate the front wall of the keyboard base, such as indicated in Fig. 2 of Wu. Decl. ¶ 58. A POSITA would have known that the ports positioned proximate the front wall of the keyboard base in Kikinis could be used in Wu's computer to facilitate communication with

ancillary computer systems and generate an image on the laptop's display. *See* Decl. ¶ 58. Accordingly, Wu in view of Kikinis discloses “*a port positioned proximate said front wall of said keyboard base, said port adapted to receive a signal from an ancillary computer system*” and “*wherein a signal from said ancillary computer system delivered to said port is effective to generate a computer-generated image on said display screen*” of limitations 1[d] and 1[e]. *See* Decl. ¶ 58.

Wu discloses that the bottom edge of the monitor includes an intermediate region (made up by the inner sides 51 and 52) between the pair of slots. Wu at Figs. 2-3; *see also* Wu at 2:26-29. Wu also discloses that the swivel mechanism includes a hole located above the vertical hole of the positioning block, which is attached to a fixed frame within the keyboard base. Wu at 1:64-2:7, Fig. 3. Although Wu does not expressly disclose a communication conduit that extends from the keyboard base into the intermediate region of the monitor, the vertical hole 131 and the hole in the fixed seat 11 suggests to a POSITA that a communication conduit extended from the keyboard base directly into the intermediate region of the monitor to connect the monitor disclosed in Wu with the processing circuitry of the laptop. Decl. ¶ 59. Some type of communication conduit between the monitor and the laptop base is essential and necessarily present. Decl. ¶ 59; *Randall Mfg. v. Rea*, 733 F.3d 1355, 1362-63 (Fed. Cir. 2013)

(holding that the obviousness analysis must account for “critical background information” and the POSITA’s knowledge, which is “part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious”). Accordingly, Wu renders obvious “*wherein said bottom edge of said display screen defines an intermediate region between said pair of slots and wherein a communication conduit extends from said keyboard base directly into said intermediate region of said display screen*” in view of the knowledge of a POSITA and the teachings of Wu.

As described above and summarized in the table below, Wu in view of Kikinis renders claim 1 obvious.⁴

Limitation	Wu and Kikinis
1[pre]. A computer system comprising:	Wu: 1:21-22: “This invention relates to a swivel mechanism for a monitor of a laptop computer.” Figs. 1, 2
[1a] a) a keyboard unit including a computer keyboard and a keyboard base that includes a front wall and a back wall;	Wu: Figs. 2, 4, 5
[1b] b) a display screen for displaying computer-generated images, said display screen defining first and	Wu: 1:21-22: “This invention relates to a swivel mechanism for a monitor of a laptop computer.” 1:28-30: “It is another object of the present invention to provide a swivel mechanism which may widen the

⁴ In this Petition, a table of the evidence from the prior art references as to each claim on a limitation-by-limitation basis is provided immediately following the analysis that shows each claim is obvious.

Limitation	Wu and Kikinis
<p>second side walls, a bottom edge that extends from the first side wall to the second side wall and two spaced slots formed in said bottom edge;</p>	<p>visible range.” 2:26-29: “The axles 22 and 24 are engaged with the monitor 5 and the fixed blocks 221 and 241 are respectively disposed beside the inner sides 52 and 51 of the monitor 5.” Figs. 2, 3</p>
<p>[1c] c) a mounting assembly proximate said back wall of said keyboard base, said mounting assembly including two spaced mounting brackets extending upwardly from a rotatable element and configured and dimensioned to be received within said two spaced slots, said mounting assembly joining said display screen to said keyboard unit and permitting both rotational motion of said display screen relative to a first axis and pivotal motion of said display screen relative to a second axis that is perpendicular to said first axis; and</p>	<p>Wu: 1:15-18: “It is, therefore, an object of the present invention to provide a swivel mechanism which enables the monitor of a laptop computer to rotate about a horizontal and a vertical axes.” 1:21-22: “This invention relates to a swivel mechanism for a monitor of a laptop computer.” 1:23-27: “It is the primary object of the present invention to provide a swivel mechanism which utilizes four tightly fitted axles in the same direction to be the horizontal axis of a monitor of a laptop computer and an upright axle to be the vertical axis thereof.” 1:59-63: “With reference to the drawings and in particular to FIGS. 1, 2 and 3 thereof, the swivel mechanism for a monitor of a laptop computer according to the present invention mainly comprises a vertical axle 1 and a horizontal axle 2.” 2:2-7: “The bottom of the fixed seat 11 has an upright axle 115 formed with longitudinal raised lines and tightly fitted into the spring 12 thereby enabling the fixed seat 11 to rotate with respect to the fixed frame 14 and therefore, obviating the limit of vertical vision angle of 35 degrees.” 2:10-14: “The horizontal axle 2 is mainly constituted by four longitudinal axles 21, 22, 23 and 24 in the same direction, four springs 25, 26, 27 and 28, two positioning plates 31 and 32, two side covers 41 and 42, and a protective cover 6.” 2:26-29: “The axles 22 and 24 are engaged with the monitor 5 and the fixed blocks 221 and 241 are respectively disposed beside the inner sides 52 and 51 of the monitor 5.”</p>

Limitation	Wu and Kikinis
<p>[1d] d) a port positioned proximate said front wall of said keyboard base, said port adapted to receive a signal from an ancillary computer system;</p>	<p>Figs. 2, 3</p> <p><u>Wu</u> Fig. 2</p> <p><u>Kikinis</u> 5:66-6:11: “FIG. 1A is an isometric view of a μPDA 10 according to an embodiment of the present invention. In this embodiment the unit is modeled on the PCMCIA standard Type II form factor, having a height D1 of about 5 mm. Body 12 is described in further detail below, and has a female portion 14 of a connector recessed at one end for engaging a mating male portion of the connector in a host computer, connecting the μPDA internal circuitry directly with a host internal bus. The host unit may be a notebook computer having a docking bay for the μPDA. Docking bays may be provided in desktop and other types of computers, and even in other kinds of digital equipment, several examples of which are described below.”</p> <p>14:55-67: “FIG. 9 is a plan view of an enhanced I/O interface unit 79 according to an aspect of the present invention. Interface unit 79, with about a 5-inch diagonal measurement, comprises a combination LCD display at least partially overlaid by a touch-sensitive input screen, providing an I/O area 80 in much the same manner as in a μPDA. Four docking bays 81, 83, 85, and 87 are provided in the left and right edges of interface unit 79 in this embodiment, and are configured for PCMCIA type II modules. One of these bays may be used for docking a μPDA according to the present invention, and the other three to provide a larger CPU, additional memory, battery power, peripheral devices such as modems, and the like by docking functional PCMCIA modules.”</p> <p>15:6-7: “A docked μPDA in this embodiment is configured to produce its I/O display on I/O area 80.”</p> <p>28:56-29:9: “FIG. 38 is an enlarged isometric view of function module 1240 according to Type 2 PCMCIA standards. Back face 1252 includes a female connector</p>

Limitation	Wu and Kikinis
	<p>1253 for mating with a male connector positioned in each module bay, such as connector 1231 in FIG. 35B and FIG. 36. Connectors 1231 and 1253 are PCMCIA connectors and interface according to that industrial standard. Guide 1251A and 1251B are sized according to the PCMCIA standards.</p> <p>Function modules are provided in many models capable of a wide range of functions. For example, computer 1221 in one embodiment has no onboard CPU or system memory. These functions are provided by function modules that may be inserted in any one of the available module bays. Other kinds of function modules that may be inserted include I/O system modules that provide speech-based, pen-based or keyboard based input. There are also floppy-disk drives, hard-disk drives, flashcard memory modules, LAN and modem adapters, Fax modules, specialty modules such as data acquisition modules adapted to specific equipment, specialty video modules, modules to adapt scanner peripherals [sic] to the computer, telephone adapters, and more.”</p> <p>30:40-49: “There are two PCMCIA-type module bays 1412A and 1412B on one side of the case, and two more (not shown) on the side opposite. The four PCMCIA module bays are arranged in a planar array as described above. A frame 1415 contains a bus structure (not shown) that interconnects all aspects of the PCMCIA type module bays to computer 1400 as described above. In this embodiment of the present invention, a standard keyboard controller (not shown) enclosed in frame 1415 connects keyboard 1403 to the internal bus structure.”</p> <p>Figs. 1A, 21A, 41</p>
<p>[1e] wherein a signal from said ancillary computer system delivered to said port is effective to generate a computer-generated image on said display</p>	<p><u>Kikinis</u> See claim chart for Kikinis citations for limitation 1[d] immediately above</p>

Limitation	Wu and Kikinis
<p>screen; and</p> <p>[1f] wherein said bottom edge of said display screen defines an intermediate region between said pair of slots and wherein a communication conduit extends from said keyboard base directly into said intermediate region of said display screen.</p>	<p>Wu</p> <p>1:64-2:7: “The positioning block 13 is a generally rectangular member disposed on a fixed frame 14 within a main body 10 through a hole 7. The positioning block 13 is formed with a vertical hole 131 in which is mounted the spring 12. The fixed frame 14 is installed by known means which has no need to be described here in detail. The bottom of the fixed seat 11 has an upright axle 115 formed with longitudinal raised lines and tightly fitted into the spring 12 thereby enabling the fixed seat 11 to rotate with respect to the fixed frame 14 and therefore, obviating the limit of vertical vision angle of 35 degrees.”</p> <p>2:26-29: “The axles 22 and 24 are engaged with the monitor 5 and the fixed blocks 221 and 241 are respectively disposed beside the inner sides 52 and 51 of the monitor 5.”</p> <p>Figs. 2-3</p>

5. Dependent Claim 2

Claim 2 depends from claim 1 and adds: “*further comprising a central processing unit mounted within said keyboard unit.*”

Kikinis discloses a computer body that includes a host CPU. Kikinis at 11:34-38; Fig. 6. A POSITA would have incorporated Kikinis’s host CPU into Wu’s laptop to perform various processes and control various computing functions. Decl. ¶ 61. At the time of the alleged invention, CPUs were an essential component of laptops (and any other form of computer) and would have been obvious to include in the laptop of Wu. Decl. ¶ 61; *see also Randall Mfg.*, 733 F.3d at 1362-63 (holding that the obviousness analysis must account for “critical

background information” and the POSITA’s knowledge, which is “part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious”). Accordingly, Wu in view of Kikinis renders claim 2 obvious. Decl. ¶ 61.

Limitation	Wu and Kikinis
2. A computer system according to claim 1, further comprising a central processing unit mounted within said keyboard unit.	<u>Kikinis</u> 11:34-38: “Host computer 66 is represented in a mostly generic form, having a host CPU 24, and input device 60, such as a keyboard, a mass storage device 28, such as a hard disk drive, and system RAM 62. It will be apparent to those with skill in the art that many hosts may have a much more sophisticated architecture, and the architecture shown is meant to be illustrative.” Fig. 6

6. Dependent Claim 3

Claim 3 depends from claim 1 and adds: “*wherein said display screen is a flat screen unit.*” Wu discloses a monitor that is a flat screen. Wu at Fig. 2; *see also* Decl. ¶ 63; ’931 patent at 1:60-63 (“Laptop computers generally employ flat-panel monitors for reasons of necessity, given space/weight constraints and the desire to pivotally mount the monitor relative to the base/keyboard for system protection and portability.”).

Additionally, a POSITA would have incorporated Kikinis’s flat-panel display unit into the laptop of Wu. Decl. ¶ 64. Kikinis teaches that the display is a flat-panel display. Kikinis at 30:36-40, Fig. 41. At the time of the alleged invention, flat-panel display units were predominantly used in laptop systems and would have

been used as the monitor in Wu's laptop. Decl. ¶ 64; *see also Randall Mfg.*, 733 F.3d at 1362-63. Accordingly, Wu in view of Kikinis renders claim 3 obvious. Decl. ¶ 64.

Limitation	Wu and Kikinis
3. A computer system according to claim 1, wherein said display screen is a flat screen unit.	<p><u>Wu</u> Fig. 2</p> <p><u>Kikinis</u> 30:36-40: “Computer 1400 comprises an attached pivotable display case 1401 and a fixed keyboard 1403. The display case rotates about a hinge 1405 and closes in a fixed detented position above the keyboard. Display case 1401 comprises a flat-panel display 1407.” Fig. 41</p>

7. Dependent Claim 8

Claim 8 depends from claim 1 and adds: “*wherein said ancillary computer system is selected from the group consisting of a desktop computer, a personal digital assistant, a palmtop computer, a hand-held computer, an electronic book, and a pocket computer.*” As described for claim 1 above, Kikinis teaches that a micro PDA can be docked into a host computer. Kikinis at 5:66-6:11, 15:6-7.

Accordingly, Wu in view of Kikinis renders claim 8 obvious. Decl. ¶ 66.

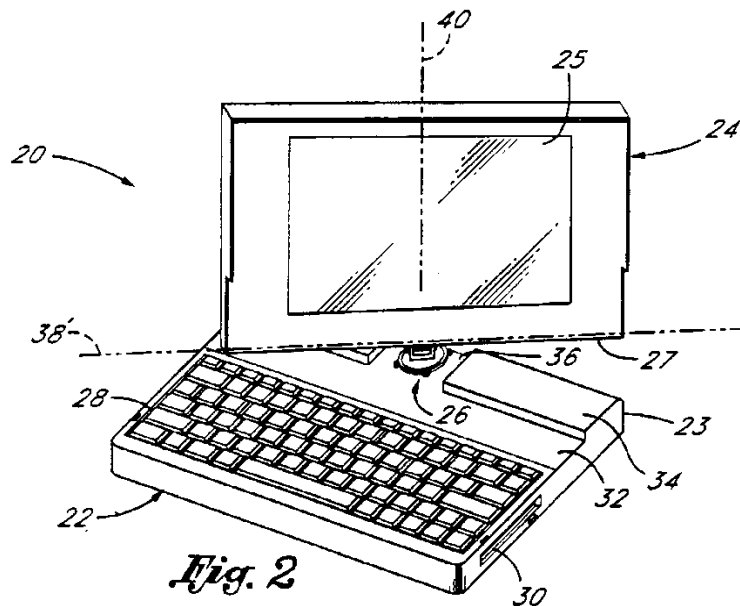
Limitation	Wu and Kikinis
8. A computer system according to claim 1, wherein said ancillary computer system is selected from the group consisting of a desktop computer, a personal	<p><u>Kikinis</u> 5:66-6:11: “FIG. 1A is an isometric view of a μPDA 10 according to an embodiment of the present invention. In this embodiment the unit is modeled on the PCMCIA standard Type II form factor, having a height D1 of about 5 mm. Body 12 is described in further detail below, and has a female portion 14 of a connector</p>

Limitation	Wu and Kikinis
<p>digital assistant, a palmtop computer, a hand-held computer, an electronic book, and a pocket computer.</p>	<p>recessed at one end for engaging a mating male portion of the connector in a host computer, connecting the μPDA internal circuitry directly with a host internal bus. The host unit may be a notebook computer having a docking bay for the μPDA. Docking bays may be provided in desktop and other types of computers, and even in other kinds of digital equipment, several examples of which are described below.”</p> <p>14:55-67: “FIG. 9 is a plan view of an enhanced I/O interface unit 79 according to an aspect of the present invention. Interface unit 79, with about a 5-inch diagonal measurement, comprises a combination LCD display at least partially overlaid by a touch-sensitive input screen, providing an I/O area 80 in much the same manner as in a μPDA. Four docking bays 81, 83, 85, and 87 are provided in the left and right edges of interface unit 79 in this embodiment, and are configured for PCMCIA type II modules. One of these bays may be used for docking a μPDA according to the present invention, and the other three to provide a larger CPU, additional memory, battery power, peripheral devices such as modems, and the like by docking functional PCMCIA modules.”</p> <p>15:6-7: “A docked μPDA in this embodiment is configured to produce its I/O display on I/O area 80.”</p> <p>30:40-49: “There are two PCMCIA-type module bays 1412A and 1412B on one side of the case, and two more (not shown) on the side opposite. The four PCMCIA module bays are arranged in a planar array as described above. A frame 1415 contains a bus structure (not shown) that interconnects all aspects of the PCMCIA type module bays to computer 1400 as described above. In this embodiment of the present invention, a standard keyboard controller (not shown) enclosed in frame 1415 connects keyboard 1403 to the internal bus structure.”</p> <p>Figs. 1A, 41</p>

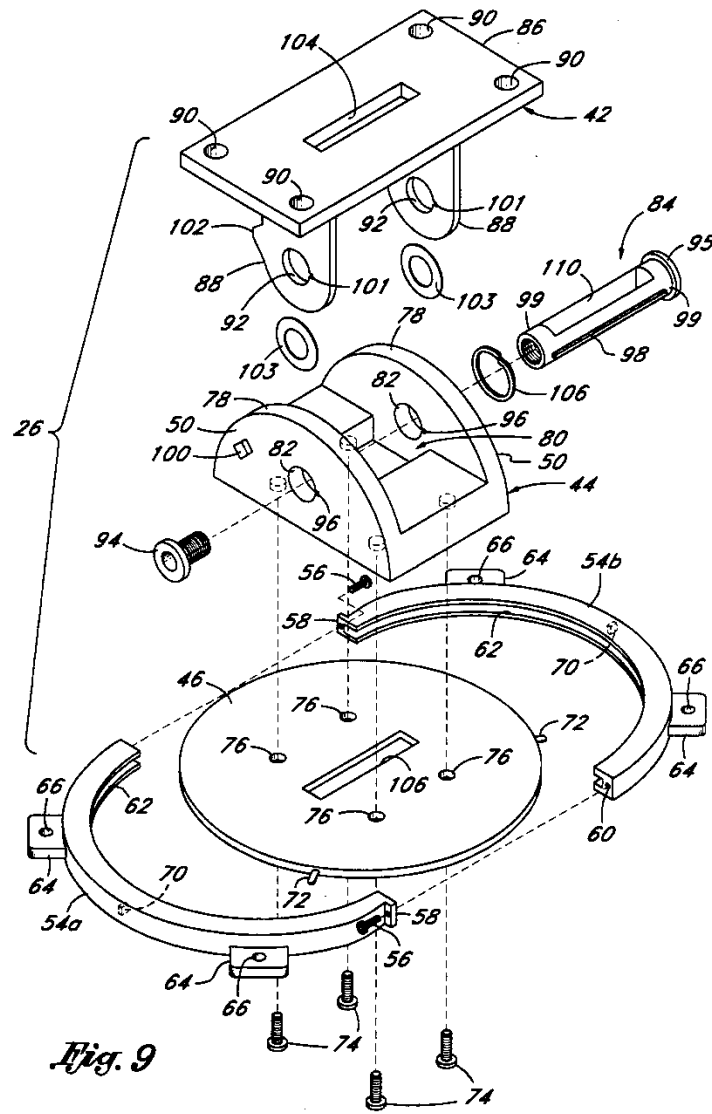
B. Ground 2: Claims 9 and 10 are obvious under 35 U.S.C. §103 over Wu in view of Kikinis and Anderson.

1. Overview of Anderson

Like Wu, Anderson discloses a portable computer with a hinge assembly that allows the display screen to be rotated from the base about a horizontal axis and rotated about a vertical axis. Anderson at Abstract. The hinge assembly provides rotation stops, preventing the screen from rotating more than 115 degrees from the closed position or rotating more than 30 degrees from the straight-forward position. Anderson at Abstract, 1:59-65. Anderson also discloses that “[o]ther ranges of motion of the swivel disk 46 are possible.” Anderson at 5:19-20. The swivel functionality of the portable computer is illustrated in Fig. 2.



An exploded view of the hinge assembly is illustrated in Figure 9.



Anderson combines a swivel disk 46 with mounting ring 54 to provide rotating of the display. Anderson at 4:63-5:2. The swivel disk fits within a grooved ring and rotates relative to the circular mounting ring attached to the base of the computer. Anderson at 4:63-5:2. Within the mounting ring are stops 70. Anderson at 5:7-18 Stop tabs 72 are oriented on the swivel disk such that the

swivel disk is stopped from rotating beyond a total of 60 degrees. Anderson at 5:7-18.

Anderson achieves rotation about a vertical axis by using a tilt-tube 84 extending through tilt base walls and through the pivot arms 88 of the attachment yoke 42. Anderson at 5:40-45. The tilt base is attached to the swivel disk. The attachment yoke is attached to the display screen.

2. It would have been obvious to combine the hinge of Wu with the rotational stop and rotatable turret of Anderson.

A POSITA would have been motivated to combine Wu and Anderson before or at the time of the alleged invention of the '931 patent. Wu and Anderson are from the same field—using a hinge assembly to provide rotation of a laptop display screen about two perpendicular axes. Both were concerned with using a hinge assembly to improve the convenience, functionality, and usability of laptop computers and, in particular, the display screen. Wu at 1:10-14, 1:31-36; Anderson at 1:30-54. The '931 patent addresses the same issue. '931 Patent at 1:7-12. Wu and Anderson both utilize a hinge to provide rotation of the display about two axes and improve the versatility of the laptop. Wu at Figs. 2, 5; Anderson at Figs. 2-3; *see also* '931 patent at Fig. 4. Additionally, Anderson solves a similar issue as Wu in a similar way, and so a POSITA at the time of the '931 patent's alleged invention would have looked to Anderson for other beneficial features to improve the laptop display. *See Dystar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick,*

464 F.3d 1356, 1368 (Fed. Cir. 2006) (stating an implicit motivation to combine exists when “the combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient”); Decl. at ¶ 69.

And a POSITA would have had a reasonable expectation of success combining Wu and Anderson because there are a finite number of ways in which these components could have been configured to improve upon the convenience and versatility of a display’s swivel mechanism. *See* Decl. at ¶ 70; M.P.E.P. § 2141.III.

For example, Anderson discloses the use of stops to limit rotation about the vertical axis to a predetermined range. *See* Anderson at Abstract, Figs. 7-9. Anderson also discloses a communication cable that passes through the swivel mechanism from the base into the cover. Anderson at 6:38-43, 6:47-55, Figs. 7-9. It would have been obvious to incorporate Anderson’s swivel stops into Wu’s swivel mechanism to prevent excessive twist of the communication cable. Decl. ¶ 70. A POSITA would have combined Wu with Anderson because this would have provided an obvious, simple means to prevent damage to the communication cable between the monitor and keyboard base. *See* Decl. at ¶ 70. Thus, the combination of Wu and Anderson is the application of the known technique of Anderson’s hinge with a communication cable and rotation stops to Wu’s hinge, which was ready for

improvement, to yield a predictable result. *See* Decl. at ¶ 70. Based on the teachings of Anderson, a POSITA would have recognized the value of modifying Wu's swivel mechanism to allow for rotation stops to prevent excessive twist of the communication cable. *See* Decl. at ¶ 70.

Similarly, a POSITA would have looked to Anderson's hinge to improve the design of the hinge in Wu. Wu discloses a desire to provide a swivel that is simple in construction. Wu at 1:37-38. Like Wu, Anderson teaches a turret design whereby the rotation about the vertical and horizontal axes occurs about a single rotatable element. Wu teaches a fixed seat that rotates about a vertical axis and upon which the horizontal rotation occurs; and Anderson teaches a rotatable swivel disk upon which the cover may rotate around a horizontal axis. It would have been obvious to incorporate Anderson's circular opening in the laptop base relative to which the hinge could rotate. Decl. ¶ 71. A POSITA would have recognized that implementation of Anderson's circular mounting ring would have improved the design of Wu's swivel mechanism and the design of its integration into a laptop. Decl. ¶ 71.

Because both Wu and Anderson are in the same field of endeavor and the configuration of components in the swivel mechanisms are similar, a POSITA would have been motivated to combine the known techniques of Anderson to provide the same design benefits to the combination of Wu and Kikinis. *See*

M.P.E.P. § 2141.III; *see also* Decl. at ¶¶ 69-71; *KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a POSITA would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill”).

3. Dependent Claim 9

As shown above, Wu in combination with Kikinis renders claim 1 obvious. Claim 9 depends from claim 1 and adds: “*further comprising at least one stop for limiting rotational motion of said display screen relative to said keyboard base.*” The ’931 patent discloses that multiple stops may be provided to limit the rotatability of the screen and that “the design and/or interaction of cooperating stops [] may assume a variety of configurations.” ’931 patent at 7:64-8:3.

Although Wu does not disclose the “*at least one stop*” limitation, this limitation would have been obvious in view of Anderson. Decl. ¶ 72. A POSITA looking to provide a hinge mechanism that would not excessively twist the communication conduit would have used Anderson’s hinge mechanism with a rotational stop. Decl. ¶ 72. Anderson teaches stop tabs 72 positioned in the swivel mechanism to contact stop blocks 70 and limit the rotation about the vertical axis of the swivel mechanism and, thus, the display screen. Anderson at 4:63-5:2, 5:7-18, Figs. 7, 9. The stop tabs and stop blocks of Anderson limit the rotation of the display screen about the vertical axis to a 60 degree range of movement. Anderson

at 5:7-18. A POSITA would have known that the swivel mechanism of Wu could be adapted to provide at least one stop to limit the rotation of the display to a desired range of rotation. Decl. ¶ 72. Accordingly, the combination of Wu and Kikinis in view of Anderson renders claim 9 obvious. Decl. ¶ 72.

Limitation	Wu, Kikinis, and Anderson
<p>9. A computer system according to claim 1, further comprising at least one stop for limiting rotational motion of said display screen relative to said keyboard base.</p>	<p><u>Anderson</u> 4:63-5:2: “The peripheral edge of the swivel disk 46 rides in a channel or groove 62 formed on the inner circumference of the mounting ring 54. The groove 62 retains the swivel disk 46 in a close sliding fit. A stop block 70 is provided within the groove 62 approximately 90° around the perimeter of the ring 54 from the adjoining ends (i.e., approximately halfway between the two ends).” 5:7-18: “The outer rim of the disk 46 includes two outwardly projecting stop tabs 72, spaced apart from each other by approximately 120° around the perimeter of the disk. The stop tabs 72 project within the groove 62 of the mounting ring 54 to contact the stop blocks 70. Both stop tabs 72 are disposed angularly forward of the stop blocks 70, and the orientation of the stop tabs 72 is such that the swivel disk 46 has a 60° range of movement. Thus, as in the illustration of FIG. 7, the swivel disk 46 may turn 30° from the neutral position shown in either direction of arrow 52 before the stop tabs 72 hit the stop blocks 70.” Figs. 7, 9</p>

4. **Dependent Claim 10**

Claim 10 depends from claim 1 and adds: “*wherein said rotatable element of said mounting assembly defines a turret that is rotatable relative to a circular opening formed in said keyboard base.*”

Wu discloses that the swivel mechanism includes a fixed seat 11 that is fitted into the circular spring 12 and vertical hole 131. Wu at 1:64-68, 2:2-7, Figs. 2-3.

The fixed seat (*rotatable element* or *turret*) is rotatable relative to the vertical hole (*circular opening*) of the keyboard base. Wu at 1:64-68, Figs. 2-3. Accordingly, Wu in view of Kikinis discloses “*wherein said rotatable element of said mounting assembly defines a turret that is rotatable relative to a circular opening formed in said keyboard base*” as required by claim 10. Decl. ¶ 74.

Additionally, this limitation would have been obvious in view of Anderson. Decl. ¶ 75. A POSITA looking to provide a hinge mechanism with a simple construction would have used Anderson’s swivel hinge that rotates relative to a circular opening in the base. Decl. ¶ 75. Anderson teaches that the swivel hinge sits on a circular mount or swivel disk 46 (*turret*), which rotates about a vertical axis relative to a circular mounting ring 54 (*circular opening*) that is affixed to the base of the computer. Anderson at 4:24-27, 4:30-38, Figs. 1, 2, 7, 8. A POSITA would have known that Wu’s hinge could be adapted to provide a turret and circular opening as disclosed by Anderson to construct a less obtrusive swivel mechanism. Decl. ¶ 75. Accordingly, the combination of Wu and Kikinis in view of Anderson renders claim 10 obvious. Decl. ¶ 75.

Limitation	Wu, Kikinis, and Anderson
10. A computer system according to claim 1, wherein said rotatable	<p>Wu 1:64-68: “The positioning block 13 is a generally rectangular member disposed on a fixed frame 14 within a main body 10 through a hole 7. The positioning block 13 is formed with a vertical hole 131 in which is mounted the spring 12.” 2:2-7: “The bottom of the fixed seat 11 has an upright axle 115 formed with longitudinal raised lines and tightly fitted into the</p>

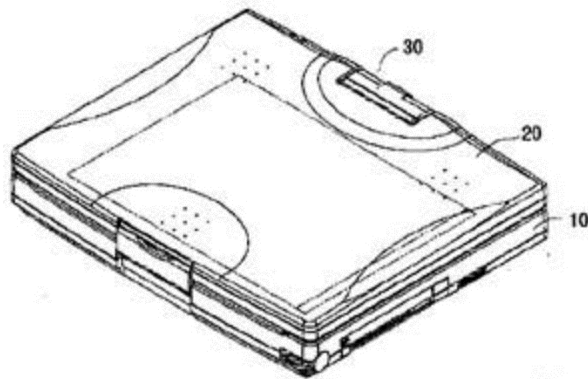
Limitation	Wu, Kikinis, and Anderson
element of said mounting assembly defines a turret that is rotatable relative to a circular opening formed in said keyboard base.	<p>spring 12 thereby enabling the fixed seat 11 to rotate with respect to the fixed frame 14 and therefore, obviating the limit of vertical vision angle of 35 degrees.”</p> <p>Figs. 2-3</p> <p><u>Anderson</u></p> <p>4:24-27: “Referring to FIG. 7, the tilt/swivel hinge 26 generally comprises a cover attachment yoke 42 which tilts about a tilt base 44 attached to a circular mount or swivel disk 46.”</p> <p>4:30-34: “The tilt base 44, the attached yoke 42 and the swivel disk 46 rotate about a vertical axis in either direction shown by a double-headed arrow 52 relative to a swivel mounting ring 54 affixed to the base 22 of the computer.”</p> <p>4:35-38: “With reference to both FIGS. 7 and 9, the swivel mounting ring 54 forms a continuous circle defined by a two-part plastic assembly held together with machine screws 56 and threaded holes 60 at their abutting ends.”</p> <p>Figs. 1, 2, 7, 8</p>

C. Ground 3: Claim 6 is obvious under 35 U.S.C. §103 over Wu in view of Kikinis and Ioka.

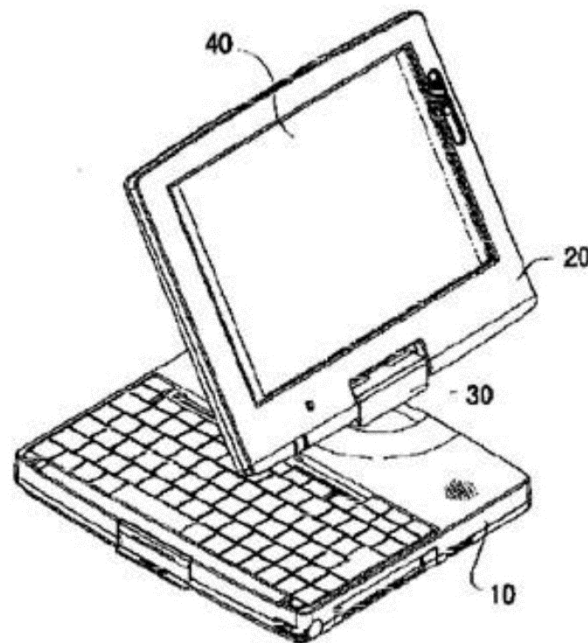
1. Overview of Ioka

Like Wu, Ioka discloses a hinge mechanism for notebook computers that provides rotation relative to its base around a horizontal axis and around a vertical axis. Ioka at ¶¶ [0005], [0007], [0008], Figs. 4-5. Ioka discloses a display screen of a notebook computer that rotates to show the screen to a customer or person sitting across from the user. Ioka at ¶ [0005]. Ioka illustrates that the notebook computer’s cover can be closed like a typical notebook computer with the screen down. Ioka at Fig. 4.

【図4】

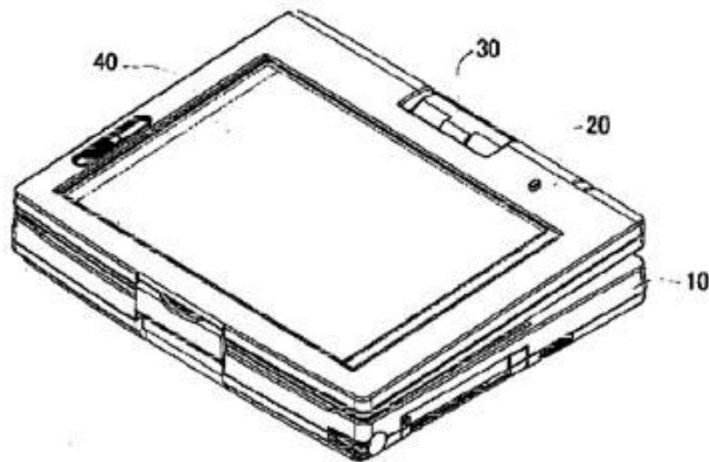


When the cover is open, a user can rotate the screen around a vertical axis. Ioka at Fig. 1.



The screen can also be rotated about its vertical axis and horizontal axis so that the screen is face up when the cover is closed. Ioka at Fig. 5. Ioka discloses that the display screen rotates around its vertical axis at least 180 degrees. Ioka at ¶ [0008]

【圖 5】



2. **It would have been obvious to combine the pivotal display of Wu with the rotational mounting structure of Ioka.**

A POSITA would have been motivated to combine Wu and Ioka before the time of the alleged invention of the '931 patent. Wu and Ioka are from the same field – using a hinge assembly to provide rotation of a display screen about two perpendicular axes. *See* Decl. at ¶ 77. Both were concerned with using a hinge assembly to improve the convenience, functionality, and usability of laptop computers and, in particular, the display screen. Wu at 1:10-14, 1:31-36); Ioka at ¶ [0003]. The '931 patent addresses the same issue. '931 Patent at 1:7-12. Wu and Ioka both utilize a swivel hinge to provide rotation of the display about two axes and improve the versatility of the laptop. Wu at Figs. 2, 5; Ioka at Figs. 1, 2; *see also* '931 patent at Fig. 4. Additionally, Ioka solves a similar issue as Wu in a similar way, and so a POSITA would have looked to Ioka for other beneficial

features to improve the laptop display. *See Dystar Textilfarben GmbH & Co. Deutschland KG*, 464 F.3d at 1368; Decl. at ¶ 77.

And a POSITA would have had a reasonable expectation of success combining Wu and Ioka because there are a finite number of ways in which these components could have been configured to improve upon the convenience and versatility of a display's swivel mechanism. Decl. at ¶ 78; *see also* M.P.E.P. § 2141.III.

For example, Ioka discloses the advantage of providing at least 180 degrees of rotation of the display screen about the vertical axes to allow the screen to be rotated to those sitting across from the laptop user. Ioka at ¶¶ [0003], [0005]. A POSITA would have combined Wu with Ioka's rotation of at least 180 degrees to improve the convenience and functionality of a laptop system. *See* Decl. at ¶ 78. Thus, the combination of Wu and Ioka is the application of the known technique of Ioka's 180 degrees of rotation to Wu's hinge, which was ready for improvement, to yield a predictable result. *See* Decl. at ¶ 78. Based on the teachings of Ioka, a POSITA would have recognized the value of modifying Wu's hinge to allow for at least 180 degrees of rotation about a vertical axis. *See* Decl. at ¶ 78.

Because both Wu and Ioka are in the same field of endeavor and the configuration of components in the swivel mechanisms are similar, a POSITA would have been motivated to combine the known techniques of Ioka to provide

the same benefit to Wu's swivel mechanism. *See* M.P.E.P. § 2141.III; *see also* Decl. at ¶¶ 77-78; *KSR*, 550 U.S. at 417 (“[I]f a technique has been used to improve one device, and a POSITA would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill”).

3. Dependent Claim 6

As shown above for Ground 1, Wu in view of Kikinis renders claim 1 obvious. Claim 6 depends from claim 1 and adds: “*wherein said mounting assembly permits angular motion of said display screen relative to said keyboard base of at least one hundred eighty degrees.*” The ’931 patent describes “angular/rotational repositioning” that provides for rotation of the display about a vertical axis. *See* ’931 patent at 3:8-16.

Wu discloses a swivel mechanism (*mounting assembly*) to widen the visible range of the monitor and to increase the convenience and working efficiency of the laptop. Wu at 1:10-14, 1:28-33. Wu discloses rotating the monitor at least 35 degrees around the vertical axle in a single direction, or a total rotation of at least 70 degrees, but does not disclose the maximum degree to which the monitor can rotate about the vertical axle. Wu at 2:2-7 (describing rotation about the vertical axle to “obviate[e] the limit of vertical vision angle of 35 degrees”). Likewise, Wu

does not disclose a limit of the degree of rotation about the vertical axle or describe a motivation to limit the rotation to a particular rotation amount.

Although Wu does not expressly disclose that the swivel mechanism allows rotation along the vertical axle of at least 180 degrees, the “*at least one hundred eighty degrees*” limitation would have been obvious in view of Ioka. Decl. ¶ 79. A POSITA looking to widen the visible range of Wu’s monitor and increase the functionality of Wu’s laptop would have used Ioka’s hinge that rotates at least 180 degrees. Decl. ¶ 79. Ioka teaches a display screen that can rotate by at least 180 degrees with respect to the computer body and closed with the display facing up. Ioka at ¶ [0007], Fig. 5. A POSITA would have known that the swivel mechanism of Wu could be adapted to swivel about the vertical axis at least 180 degrees, as disclosed by Ioka. Decl. ¶ 79. Accordingly, Wu in view of Kikinis and Ioka renders claim 6 obvious. Decl. ¶ 79.

Limitation	Wu, Kikinis, and Ioka
6. A computer system according to claim 1, wherein said mounting assembly permits angular motion of said display screen relative to said keyboard base of at least one	<p><u>Ioka:</u> [0007]: “Moreover, since the connection part 30 prevents the severing of the wire between the main unit 10 and the display part 20, the angle of rotation is restricted in a range from +180° to -180° for the rotation in the perpendicular direction of the display part when the angle of the front surface of the display panel of the above-mentioned display part is set at 0°.” Figs. 1, 5</p>

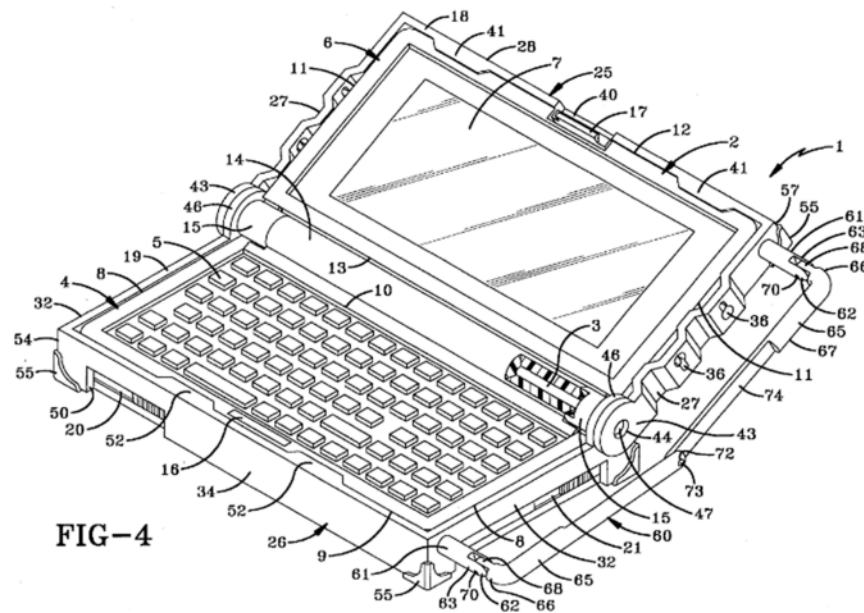
Limitation	Wu, Kikinis, and Ioka
hundred eighty degrees.	

D. Ground 4: Claims 1 and 8 are obvious under 35 U.S.C. §103 over Wu in view of Kumar.

1. Overview of Kumar

Kumar discloses a protective case for portable computers. Kumar discusses that portable computers “may be all purpose computing machines capable of running a variety of types of software programs.” Kumar at 1:20-22. In addition, “[t]hese portable personal computers may interact with a variety of portable and stationary peripheral input/output devices such as printers, light pens, image scanners, video scanners, etc.” Kumar at 1:22-25.

Kumar describes a protective case that is adapted to hold a portable computer. Kumar at 3:60-62. Kumar discloses that the “[p]ortable computer 2 is of the general clam shell type having a base housing 4 with a standard keyboard 5 mounted thereon. A top housing 6 houses a display screen 7, and is pivotally attached to base housing 4 via a hinge pin 3 and may be moved between a closed position whereby the display screen covers keyboard 5 and an open position (Fig. 4).” Kumar at 3:64-4:3. Kumar additionally discloses that the “portable computer 2 is normally provided with a plurality of input/output ports such as port 20 extending through front wall 9, and port 21 extending through sidewall 8.” Kumar at 4:21-24.



2. **It would have been obvious to combine the pivotal display of Wu with the input/output ports of Kumar.**

As described above, Wu teaches a swivel mechanism for a monitor of a laptop computer. Wu at Abstract. Wu recognized that the working efficiency and practicality of a laptop computer could be improved by providing a swivel mechanism that allowed for rotation about a horizontal axle and for rotation about a vertical axle. Wu at 1:23-36. Wu discloses a swivel mechanism that provides for rotation about two perpendicular axles using a fixed seat that could rotate about a vertical axle connected to the base (Wu at 1:63-2:9) and a display that could rotate about a horizontal axle connected to the fixed seat (Wu at 2:10-43).

A POSITA starting with Wu would have known that the laptop computer would need to include other hardware and components commonly found in laptop

computers. Decl. ¶ 82. The POSITA would also understand that Wu only discloses a swivel mechanism. Decl. ¶ 82. Thus, a POSITA would have looked for existing solutions to provide a complete laptop that addressed the same efficiency and practicality design goals addressed by Wu. Decl. ¶ 82. The POSITA would have considered other laptop and computer systems, including those that disclose components and hardware to improve the working efficiency and practicality of computer systems. Decl. ¶ 82.

A POSITA looking in this area would have used Kumar's discussion of a laptop computer with ports on a laptop base's front wall. Decl. ¶ 83. Kumar discloses multiple input/output ports on the base's front wall. Kumar at 4:21-24. It further discloses that laptop computers may interact with a variety of types of input/output devices. Kumar at 1:22-25. It would have been obvious to incorporate Kumar's discussion of input/output ports with Wu's laptop with a hinge mechanism to improve the work efficiency and practicality of the laptop. Decl. ¶ 83. A POSITA would have recognized that implementation of the input/output ports on the front wall of the keyboard display would have been an obvious location selection because it would allow the user to connect ancillary devices while displaying content or images therefrom to others. Decl. ¶ 83.

"When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a

different one. If a [POSITA] can implement a predictable variation, § 103 likely bars its patentability.” *KSR*, 550 U.S. at 417. The combination of Wu and Kumar results from common design incentives with a predictable variation of a laptop computer from the same portable computer field, making this an obvious combination of existing prior art elements. *See* Decl. ¶¶ 81-84.

3. Independent Claim 1

As shown above in Section VI(A)(4) for Ground 1, Wu discloses or renders obvious the preamble and limitations 1[a], [b], [c], and [f].

Although Fig. 2 of Wu appears to show ports and jacks on the side wall of the keyboard base, Wu does not teach the nature of these ports and jacks. Limitations 1[d] and 1[e], however, would have been obvious in view of Kumar. Decl. ¶ 86. A POSITA looking to facilitate communication with external components would have used Kumar’s input/output ports and combined it with Wu. Decl. ¶ 86. Kumar discloses multiple input/output ports on a laptop base’s front wall. Kumar at 4:21-24. It further discloses that laptop computers may interact with a variety of types of input/output devices. Kumar at 1:22-25. In this way, the laptop computer of Kumar can receive a signal from an ancillary input device and generate a computer-generated image on a laptop’s display. Decl. ¶ 86. A POSITA would have understood that the input/output ports shown in Kumar could be placed on other laptop computers, such as the one disclosed in Wu, and

positioned proximate the front wall of the keyboard base, such as indicated in Fig. 2 of Wu. Decl. ¶ 86. A POSITA would have known that the ports positioned on the front wall of the keyboard base in Kumar could be used by Wu’s computer to facilitate communication with ancillary computer systems and generate an image on the laptop’s display. See Decl. ¶ 86. Accordingly, Wu in view of Kumar discloses “a port positioned proximate said front wall of said keyboard base, said port adapted to receive a signal from an ancillary computer system” and “wherein a signal from said ancillary computer system delivered to said port is effective to generate a computer-generated image on said display screen” of limitations 1[d] and 1[e]. See Decl. ¶ 86.

As a result, Wu in combination with Kumar renders claim 1 obvious. See Decl. ¶¶ 85-87.

Limitation	Wu and Kumar
[1pre]-[1c]	<u>Wu</u> See claim chart in Section VI(A)(4) (Ground 1) for Wu citations for limitations [1pre]-[1c]
[1d] d) a port positioned proximate said front wall of said keyboard base, said port adapted to receive a signal from an ancillary computer	<u>Wu</u> Fig. 2 <u>Kumar</u> 1:15-25: “Since the advent of the personal computer, manufacturers and industrial users have continually developed faster, smaller and more versatile machines, including portable computers that are dedicated to perform a specific function such as word processing, data collection or item identification. Alternatively, portable computers may be all purpose computing machines capable of running a variety of types of software programs. These portable personal computers may interact with a

Limitation	Wu and Kumar
system;	variety of portable and stationary peripheral input/output devices such as printers, light pens, image scanners, video scanners, etc.” 4:21-24: “Additionally, portable computer 2 is normally provided with a plurality of input/output ports such as port 20 extending through front wall 9, and port 21 extending through sidewall 8.” Figs. 4-5
[1e] wherein a signal from said ancillary computer system delivered to said port is effective to generate a computer-generated image on said display screen; and	<u>Kumar</u> See claim chart in this table for Kumar citations for limitations [1d] immediately above
[1f]	<u>Wu</u> See claim chart in Section VI(A)(4) (Ground 1) for Wu citations for limitations [1f]

4. Dependent Claim 8

Claim 8 depends from claim 1 and adds: “*wherein said ancillary computer system is selected from the group consisting of a desktop computer, a personal digital assistant, a palmtop computer, a hand-held computer, an electronic book, and a pocket computer.*” As described for claim 1 above, Kumar teaches a plurality of input/output ports on the front wall of a laptop’s base. Kumar at 4:21-24, Figs. 4-5. Kumar’s input/output ports on a laptop would indicate to a POSITA that ancillary devices could be connected to the input port on the face of the laptop

disclosed in Kumar. Decl. ¶ 88; *see also* Kumar at 1:22-25 (disclosing several example input/output devices connectable to the laptop). A POSITA would understand that such ancillary devices could include one of a desktop computer, a personal digital assistant, a palmtop computer, a hand-held computer, an electronic book, and a pocket computer. Decl. ¶ 88. Accordingly, Wu in view of Kumar renders claim 8 obvious. Decl. ¶ 88.

Limitation	Wu and Kumar
<p>8. A computer system according to claim 1, wherein said ancillary computer system is selected from the group consisting of a desktop computer, a personal digital assistant, a palmtop computer, a hand-held computer, an electronic book, and a pocket computer.</p>	<p><u>Kumar</u> 1:15-25: “Since the advent of the personal computer, manufacturers and industrial users have continually developed faster, smaller and more versatile machines, including portable computers that are dedicated to perform a specific function such as word processing, data collection or item identification. Alternatively, portable computers may be all purpose computing machines capable of running a variety of types of software programs. These portable personal computers may interact with a variety of portable and stationary peripheral input/output devices such as printers, light pens, image scanners, video scanners, etc.” 4:21-24: “Additionally, portable computer 2 is normally provided with a plurality of input/output ports such as port 20 extending through front wall 9, and port 21 extending through sidewall 8.” Figs. 4-5</p>

E. Ground 5: Claims 3, 9, and 10 are obvious under 35 U.S.C. §103 over Wu in view of Kumar and Anderson.

1. It would have been obvious to combine the hinge of Wu with the flat panel display, rotational stop, and rotatable turret of Anderson.

As discussed above for Ground 2 in Section VI(B)(2), it would have been obvious to combine Wu with Anderson.

2. Dependent Claim 3

Claim 3 depends from claim 1 and adds: “*wherein said display screen is a flat screen unit.*” Wu discloses a monitor that is a flat screen. Wu at Fig. 2; *see also* Decl. ¶ 92; ’931 patent at 1:60-63 (“Laptop computers generally employ flat-panel monitors for reasons of necessity, given space/weight constraints and the desire to pivotally mount the monitor relative to the base/keyboard for system protection and portability.”).

Additionally, a POSITA would have incorporated Anderson’s flat-panel display unit into the laptop of Wu. Decl. ¶ 93. Anderson teaches that the display is a liquid crystal display (LCD). Anderson at 1:19-26, Figs. 1-2; *see also* ’931 patent at 6:44-47 (describing that “display monitor 104 typically employs a liquid crystal display (‘LCD’)”). At the time of the alleged invention, flat-panel display units were predominantly used in laptop systems and would have been used as the monitor in Wu’s laptop. Decl. ¶ 93; *see also Randall Mfg.*, 733 F.3d at 1362-63.

Accordingly, Wu in view of Kumar and Anderson renders claim 3 obvious. Decl.

¶¶ 92-93.

Limitation	Wu, Kumar, and Anderson
3. A computer system according to claim 1, wherein said display screen is a flat screen unit.	<p>Wu Fig. 2</p> <p>Anderson 1:19-26: “Liquid crystal displays (LCDs) are used in many personal computer screens. LCDs are desirable for personal computers in that they are lightweight and have an extremely low power consumption in contrast to cathode ray tube (CRT) displays of conventional desktop computers. In addition, an LCD generally retains a great clarity of display in the presence of bright light.” Fig. 41</p>

3. Dependent Claim 9

Claim 9 depends from claim 1 and adds: “*further comprising at least one stop for limiting rotational motion of said display screen relative to said keyboard base.*” As discussed above in Section VI(B)(3) for Ground 2, Anderson discloses this limitation. Accordingly, the combination of Wu and Kumar in view of Anderson renders claim 9 obvious.

Limitation	Wu, Kumar, and Anderson
9. A computer system according to claim 1, further comprising at least one stop for limiting rotational motion of said display screen relative to said keyboard base.	<p>Anderson See claim chart in Section VI(B)(3) (Ground 2) for Anderson citations for claim 9</p>

4. **Dependent Claim 10**

Claim 10 depends from claim 1 and adds: “*wherein said rotatable element of said mounting assembly defines a turret that is rotatable relative to a circular opening formed in said keyboard base.*” As discussed above for Ground 2 in Section VI(B)(4), Wu and/or Anderson discloses this limitation. Accordingly, the combination of Wu and Kumar in view of Anderson renders claim 10 obvious.

Limitation	Wu, Kumar, and Anderson
10. A computer system according to claim 1, wherein said rotatable element of said mounting assembly defines a turret that is rotatable relative to a circular opening formed in said keyboard base.	<u>Wu and Anderson</u> <i>See claim chart in Section VI(B)(4) (Ground 2) for Wu and Anderson citations for claim 10</i>

F. Ground 6: Claims 2 and 6 are obvious under 35 U.S.C. §103 over Wu in view of Kumar and Ioka.

1. It would have been obvious to combine the swivel hinge of Wu with the processor and rotational limits of Ioka.

As discussed above for Ground 3 in Section VI(C)(2), it would have been obvious to combine Wu with the rotational limits of Ioka.

2. Dependent Claim 2

Claim 2 depends from claim 1 and adds: “*further comprising a central processing unit mounted within said keyboard unit.*” Ioka discloses a portable information processor that includes a CPU in the base. Ioka at ¶ [0006]. A POSITA would have incorporated Ioka’s CPU into Wu’s laptop to perform various

processes and control various computing functions. Decl. ¶ 99. At the time of the alleged invention, CPUs were an essential component of laptops (and any other form of computer) and would have been obvious to include in the laptop of Wu. Decl. ¶ 99; *Randall Mfg.*, 733 F.3d at 1362-63. Accordingly, Wu in view of Kumar and Ioka renders claim 2 obvious. Decl. ¶ 99.

Limitation	Wu, Kumar, and Ioka
<p>2. A computer system according to claim 1, further comprising a central processing unit mounted within said keyboard unit.</p>	<p><u>Ioka:</u> [0006]: “A description of the embodiment of the present invention is provided on based on the figures. As shown in Figure 1, the portable information processor in the present embodiment is composed of a main unit 10 that has a power supply, CPU and memory inside it, and keys for data entry on the upper surface thereof, a display part 20 that has a display panel on the top surface, and a connection part 30 that connects the display part 20 rotatably in the perpendicular direction relative to the main unit 10 and the direction that is orthogonal to the perpendicular direction. Here the display part 20 has an input coordinate position determination device with which pen touch is possible.”</p>

3. Dependent Claim 6

As shown above for Ground 4 in Section VI(D)(3), Wu in view of Kumar renders claim 1 obvious. Claim 6 depends from claim 1 and adds: “*wherein said mounting assembly permits angular motion of said display screen relative to said keyboard base of at least one hundred eighty degrees.*” As discussed above for Ground 3 in Section VI(C)(3), Ioka discloses this limitation. Accordingly, Wu in view of Kumar and Ioka renders claim 6 obvious.

Limitation	Wu, Kumar, and Ioka
<p>6. A computer system according to claim 1, wherein said mounting assembly permits angular motion of said display screen relative to said keyboard base of at least one hundred eighty degrees.</p>	<p><u>Ioka</u> See claim chart in Section VI(C)(3) (Ground 3) for Ioka citations for claim 6</p>

VII. CONCLUSION

Petitioner respectfully requests that *inter partes* review of the '931 patent be instituted and that claims 1-3, 6, and 8-10 be found unpatentable.

Dated: May 6, 2017

Respectfully submitted,

/Eric J. Klein/

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105, the undersigned certifies that on May 6, 2017, a complete and entire copy of this Petition for *Inter Partes* Review, all supporting exhibits, and Lenovo (United States) Inc.'s Power of Attorney were served via Federal Express Overnight Delivery, costs prepaid, to the Patent Owner by serving the correspondence address of record as follows:

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A complete and entire copy of this Petition for *Inter Partes* Review, all supporting exhibits, and Lenovo's (United States) Inc.'s Power of Attorney were also provided via email and Federal Express Overnight Delivery, costs prepaid, to the Patent Owner's litigation counsel, as follows, whom Lenovo believes as likely to effect service:

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CERTIFICATE OF COMPLIANCE PURSUANT TO 37 C.F.R. § 42.24

This paper complies with the type-volume limitation of 37 C.F.R. § 42.24. The paper contains 12,243 words, excluding the parts of the paper exempted by § 42.24(a).

This paper also complies with the typeface requirements of 37 C.F.R. § 42.6(a)(ii) and the type style requirements of § 42.6(a)(iii)&(iv).

Dated: May 6, 2017

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